UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/897,988	07/05/2001	Yuta Nakai	US-142O	1677

38108 7590 08/11/2009

CERMAK & KENEALY LLP
ACS LLC
515 EAST BRADDOCK ROAD
SUITE B
ALEXANDRIA, VA 22314

EXAMINER	
MARVICH, MARIA	
ART UNIT	**PAPER NUMBER**
1633	

MAIL DATE	DELIVERY MODE
08/11/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte YUTA NAKAI, KAZUO NAKANISHI, YOSHIO KAWAHARA, HISAO ITO and OSAMU KURAHASHI

Appeal 2009-004917
Application 09/897,988
Technology Center 1600

Decided: August 11, 2009

Before ERIC GRIMES, RICHARD M. LEBOVITZ, and STEPHEN WALSH, *Administrative Patent Judges*.

WALSH, *Administrative Patent Judge*.

DECISION ON APPEAL

This is an appeal under 35 U.S.C. § 134(a) involving claims to a method for producing an amino acid or a nucleic acid. The Patent Examiner rejected the claims as anticipated. We have jurisdiction under 35 U.S.C. § 6(b). We reverse.

STATEMENT OF THE CASE

The invention relates to a method that uses a microorganism for producing a substance. (Spec. 1.)[1] Claims 1, 7 and 12-14 are on appeal.[2] Claim 1 is representative and reads as follows:

1. A method for producing a target substance, comprising:

A) culturing an *Escherichia coli* strain in a medium; and

B) collecting said substance from said medium,

wherein the *Escherichia coli* strain has an ability to produce and accumulate the target substance in the medium and has been modified so to have a characteristic selected from the group consisting of:

(i) enhanced activity of an enzyme selected from the group consisting of cytochrome bo-type oxidase and NDH-I, wherein said activity is enhanced by increasing a copy number of a gene coding for said enzyme or by modifying an expression regulatory sequence of said gene,

(ii) deficient activity of an enzyme selected from the group consisting of cytochrome bd type oxidase and NDH-II, wherein said activity is made deficient by disrupting a gene coding for said enzyme, and

(iii) combinations thereof,

wherein the target substance is selected from the group consisting of an L-amino acid and a nucleic acid.

The Examiner rejected the claims as follows:

- claims 1, 7, and 12-14 under 35 U.S.C. § 102(b) as anticipated by Ciccognani;[3] and

---

[1] Citations are to the "Specification – clean copy" filed Nov. 23, 2004.

[2] According to Appellants, claims 2-5 and 8-10 were cancelled, and claims 6 and 11 were objected to but would be allowable if made independent. (App. Br. 3.)

[3] Diana T. Ciccognani et al., *Carbon monoxide-binding properties of the cytochrome bo quinol oxidase complex in Escherichia coli are changed by*

• claims 1, 7, and 12-14 under 35 U.S.C. § 102(a) as anticipated by Spehr.[4]

ANTICIPATION

The Issue

The Examiner's position is that Ciccognani described A) culturing an *E. coli* strain having one of the properties defined in claim 1, and B) collecting the cells from the medium. (Ans. 3.) The Examiner made a similar finding regarding Spehr. (*Id.* at 4.) The Examiner contends that the cells collected by Ciccognani and by Spehr inherently contained nucleic acids and L-amino acids, and that each of Ciccognani and Spehr therefore inherently performed the claimed step B) "collecting said substance from said medium." (*Id.* at 6.)

Appellants contend that Ciccognani did not teach collection of the target substance from the medium, "whether from within the cell, or as an excretion product of the cell." (App. Br. 8.) Similarly, Appellants contend that Spehr "fail[s] to teach a method of producing and collecting a target substance, such as an L-amino acid or nucleic acid." (*Id.* at 9.)

The issue with respect to this appeal is whether it is reasonable to interpret the claimed step "collecting [an L-amino acid or a nucleic acid]

---

copper deficiency in continuous culture, 94 FEMS MICROBIOL. LETTERS 1-6 (1992).

[4] Volker Spehr, *Overexpression of the Escherichia coli nuo-Operon and Isolation of the Overproduced NADH:Ubiquinone Oxidoreductase (Complex I)*, 38 BIOCHEM. 16261-267 (1999).

substance from said medium" to mean "collecting [cells containing an L-amino acid or a nucleic acid] substance from said medium."

Findings of Fact

1. The Specification states:

> [T]he present invention provides the following.
> (1) A method for producing a target substance utilizing a microorganism comprising culturing the microorganism in a medium to produce and cause accumulation of the target substance in the medium and collecting the target substance . . .
>
> (Spec. 4.)

2. The Specification states:

> For collection of the metabolic product from the medium after the culture, special methods are not required for the present invention. That is, the present invention can be practiced by using a combination of conventional well-known ion exchange techniques, precipitation techniques and other techniques.
>
> (Spec. 15.)

3. Ciccognani described collecting cells of *E. coli* strain RG145 from medium. (P. 2, para. 3.1.)

4. Spehr described harvesting genetically modified *E. coli* cells from medium. (P. 16262, para. entitled "*Expression of the nuo-Operon and Overproduction of Complex I.*")

Principles of Law

> To anticipate a claim, a prior art reference must disclose every limitation of the claimed invention, either explicitly or inherently. Anticipation is an issue of fact, and the question of whether a claim limitation is inherent in a prior art reference is a factual issue.

In re Schreiber, 128 F.3d 1473, 1477 (Fed. Cir. 1997) (citations omitted). "[D]uring examination proceedings, claims are given their broadest reasonable interpretation consistent with the specification." *In re Hyatt*, 211 F.3d 1367, 1372 (Fed. Cir. 2000).

Analysis

Claim 1 recites two steps: A) culturing certain cells in a medium, and B) "collecting" a certain substance from the medium. The claim defines the substance being collected as "selected from the group consisting of an L-amino acid and a nucleic acid."

The Examiner expressly relied on the principle that claims receive their broadest reasonable interpretation during prosecution, and summarized his position as follows: "While the prior art teaches separating the cells from the media, which amounts to separating the substances from the media, the prior art reference anticipates the instant claims." (Ans. 6.) There is no dispute that the cells collected in the prior art inherently contained an L-amino acid or a nucleic acid. Whether it is reasonable to treat those intracellular components as collected from the medium is the question.

The Specification describes the invention as using the microorganism to produce and cause accumulation of the target substance in the medium. (FF1.) Given that explanation, we treat the cell culture environment as comprising two compartments that may contain the target substance: the interior volume of the cells where the target substance is produced, and the

medium outside the cells where the target substance is accumulated. Step A in the claim is "culturing an *Escherichia coli* strain in a medium." When step B recites "collecting said substance from said medium," the antecedent of "said medium" is the medium in which the *E. coli* cells are being cultured, a distinct compartment from the interior volume of the cells themselves. Reading the claim as a whole in light of the Specification, we conclude that "collecting said substance from said medium" means collecting the target substance from the medium outside the cells where the target substance is accumulated. In our view, the claim step "collecting said substance from said medium" is not reasonably interpreted to mean collecting cells.

CONCLUSIONS OF LAW

We conclude that it is not reasonable to interpret the claimed step "collecting [an L-amino acid or a nucleic acid] substance from said medium" to mean "collecting [cells containing an L-amino acid or a nucleic acid] substance from said medium."

SUMMARY

We reverse the rejections of

claims 1, 7 and 12-14 under 35 U.S.C. § 102(b) as anticipated by Ciccognani; and

claims 1, 7 and 12-14 under 35 U.S.C. § 102(a) as anticipated by Spehr.

REVERSED

Ssc:

CERMAK & KENEALY LLP
ACS LLC
515 EAST BRADDOCK ROAD
SUITE B
ALEXANDRIA, VA 22314